



US010907331B1

(12) **United States Patent**
Iocco

(10) **Patent No.:** **US 10,907,331 B1**
(45) **Date of Patent:** ***Feb. 2, 2021**

(54) **RAPID-INSTALL UNDERMOUNT SINK BRACKET**

(56) **References Cited**

U.S. PATENT DOCUMENTS

(71) Applicant: **Augustine Albert Iocco**, Harrison City, PA (US)

139,408 A * 5/1873 Meigs A47B 57/567
248/244

(72) Inventor: **Augustine Albert Iocco**, Harrison City, PA (US)

277,510 A * 5/1883 Roberts A47B 57/26
108/106

(*) Notice: Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 0 days.

391,438 A * 10/1888 Van Horn A47B 57/567
248/244

This patent is subject to a terminal disclaimer.

498,945 A * 6/1893 Smith A47B 57/567
248/244

(21) Appl. No.: **16/691,474**

515,836 A * 3/1894 Mueller E03C 1/33
4/649

(22) Filed: **Nov. 21, 2019**

565,539 A * 8/1896 Hartzell A47B 57/567
248/244

Related U.S. Application Data

(63) Continuation-in-part of application No. 16/510,902, filed on Jul. 13, 2019, now Pat. No. 10,563,387.

569,640 A * 10/1896 Hartzell A47B 57/567
248/244

(51) **Int. Cl.**
E03C 1/33 (2006.01)

845,917 A * 3/1907 Worley et al. A47B 96/067
211/90.02

(52) **U.S. Cl.**
CPC **E03C 1/33** (2013.01)

1,066,806 A * 7/1913 Freud A47B 57/567
248/244

(58) **Field of Classification Search**
CPC ... E03C 1/32; E03C 1/33; E03C 1/322; E03C 1/324; E03C 1/335; F16M 3/022
USPC 108/147.11, 147.16, 147.17; 248/244, 248/295.11, 544; 312/140.1, 140.3, 312/140.4; 29/890.141; 4/631-635, 645, 4/647-649

2,457,373 A * 12/1948 Hunter A47B 5/02
248/244

3,008,150 A * 11/1961 Lyon, Jr. E03C 1/335
4/650

3,022,519 A * 2/1962 Lang E03C 1/33
4/650

3,583,002 A * 6/1971 Roberts E03C 1/33
4/636

(Continued)

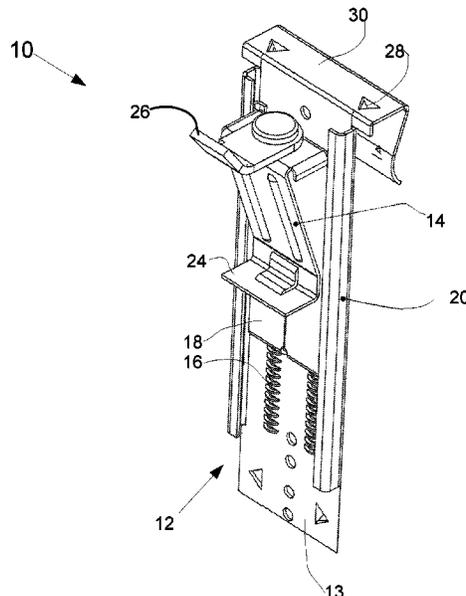
Primary Examiner — Joshua E Rodden

(57) **ABSTRACT**

An adjustable sink positioning and mounting apparatus for rapidly attaching sinks to the bottom of a counter top includes a channel base member with two columns of ratchet teeth horizontally misaligned, and a sliding sled member releasably engaged with the ratchet base channel. The sliding sled member includes an arm adjacent the top end and at least one blade spring with a curved tip at the lower end.

See application file for complete search history.

12 Claims, 8 Drawing Sheets



(56)

References Cited

U.S. PATENT DOCUMENTS

3,813,707 A * 6/1974 Fowell E03C 1/33
4/650
4,340,199 A * 7/1982 Brock A47G 1/215
248/222.11
5,653,550 A * 8/1997 Mutz E03C 1/33
403/329
6,105,182 A * 8/2000 Elnar A61H 7/00
248/125.3
8,356,367 B2 1/2013 Flynn
9,290,919 B2 3/2016 Blaine
10,184,236 B2 * 1/2019 Xu E03C 1/335
2010/0301175 A1 12/2010 Grayson
2011/0272549 A1 * 11/2011 Benz A47B 57/562
248/244
2015/0272353 A1 * 10/2015 Christodoulou A47G 1/202
29/525.01

* cited by examiner

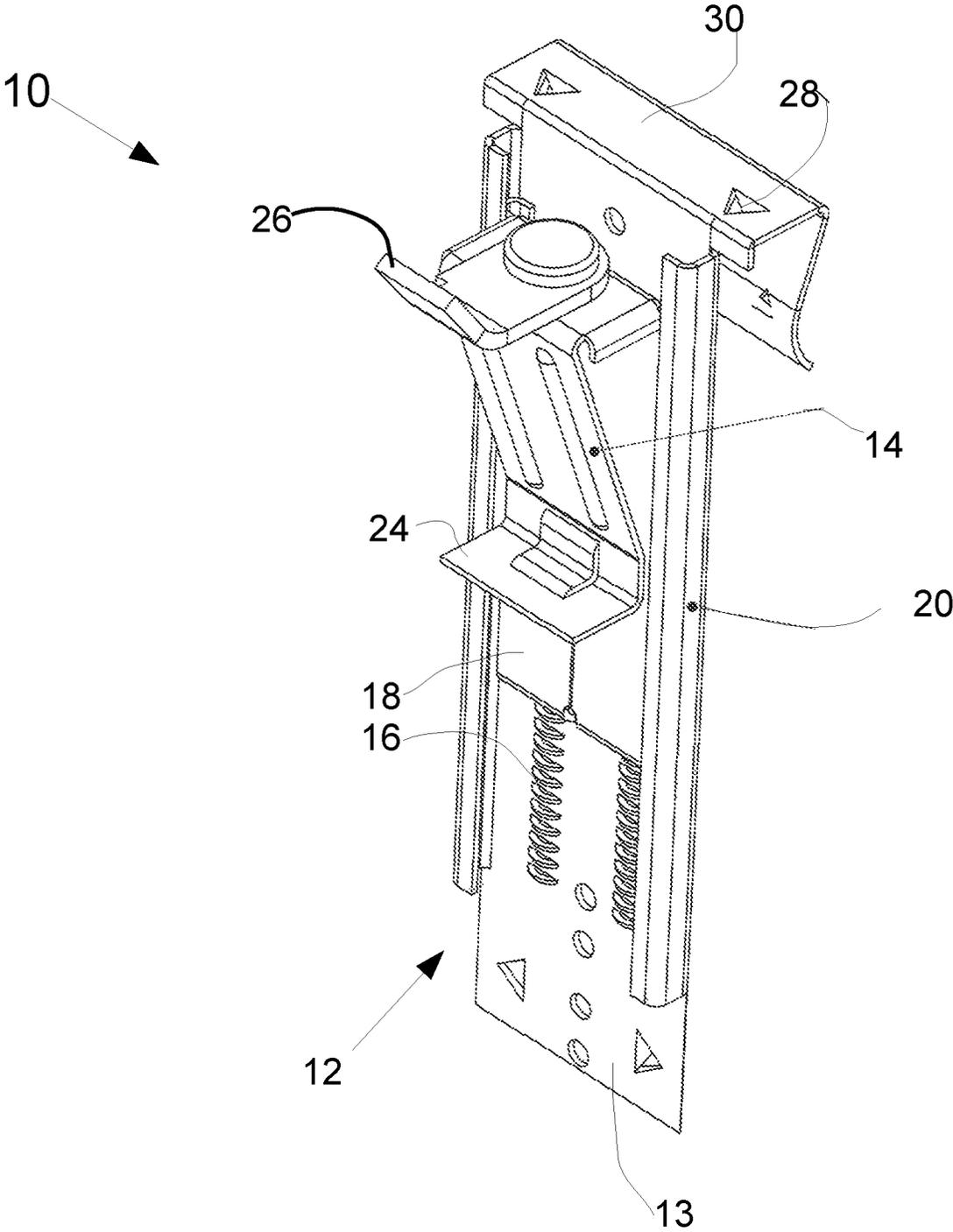


FIG. 1

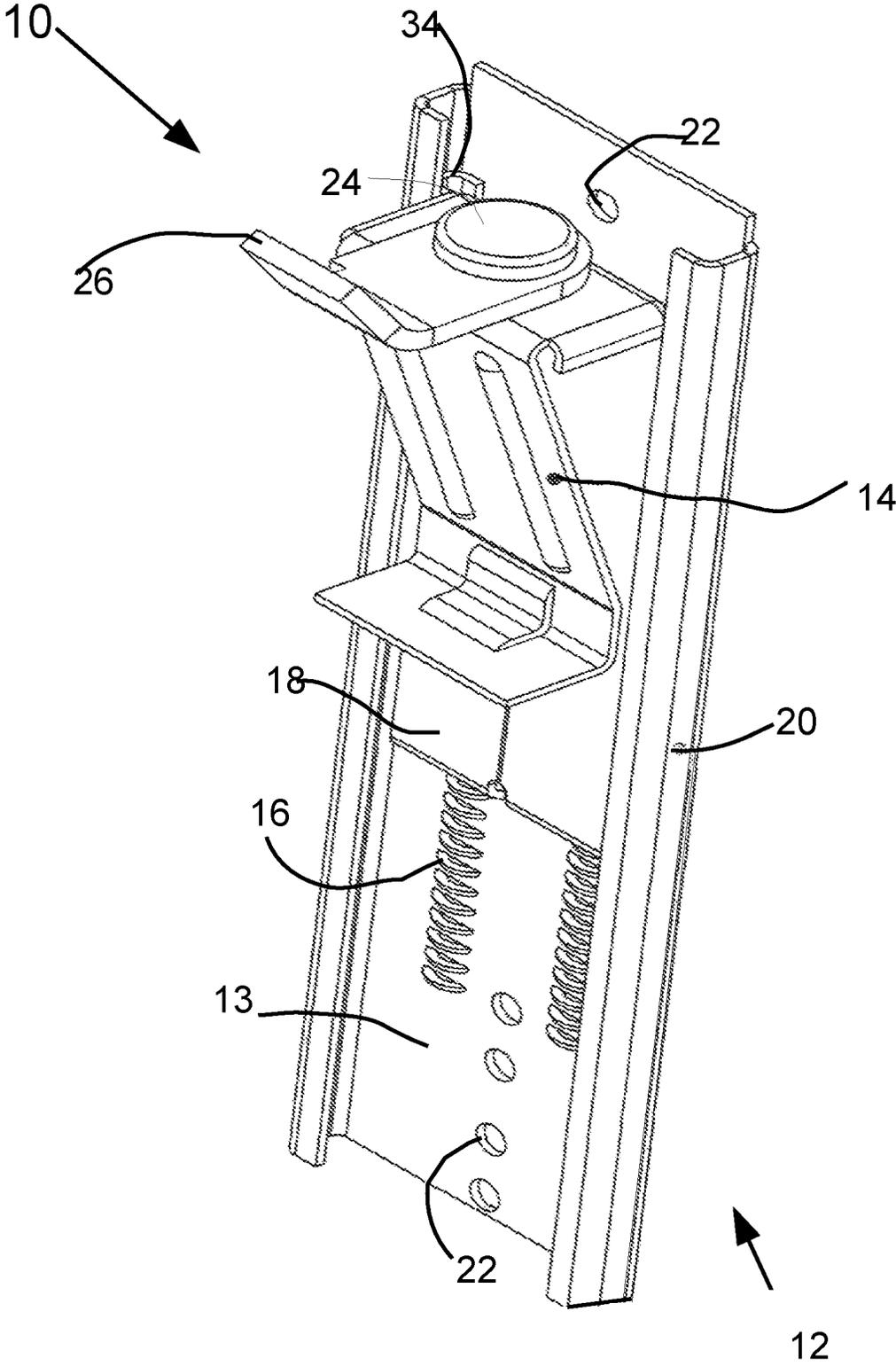


FIG. 2

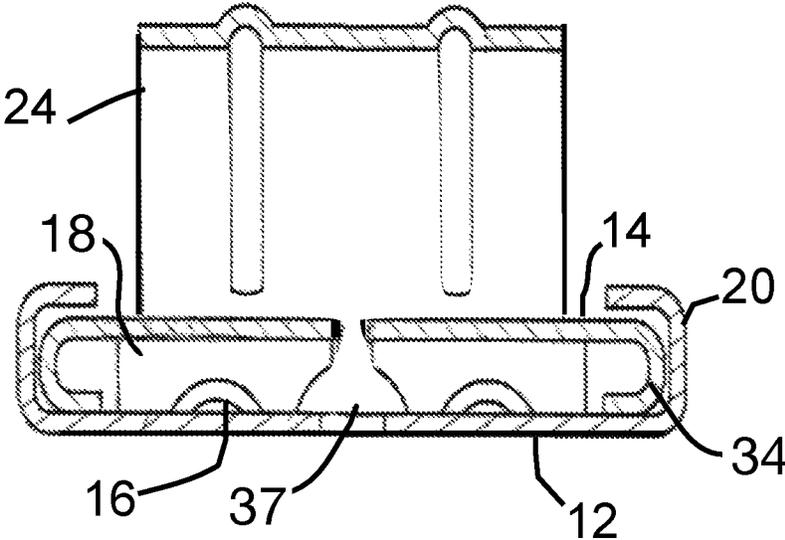


FIG. 3

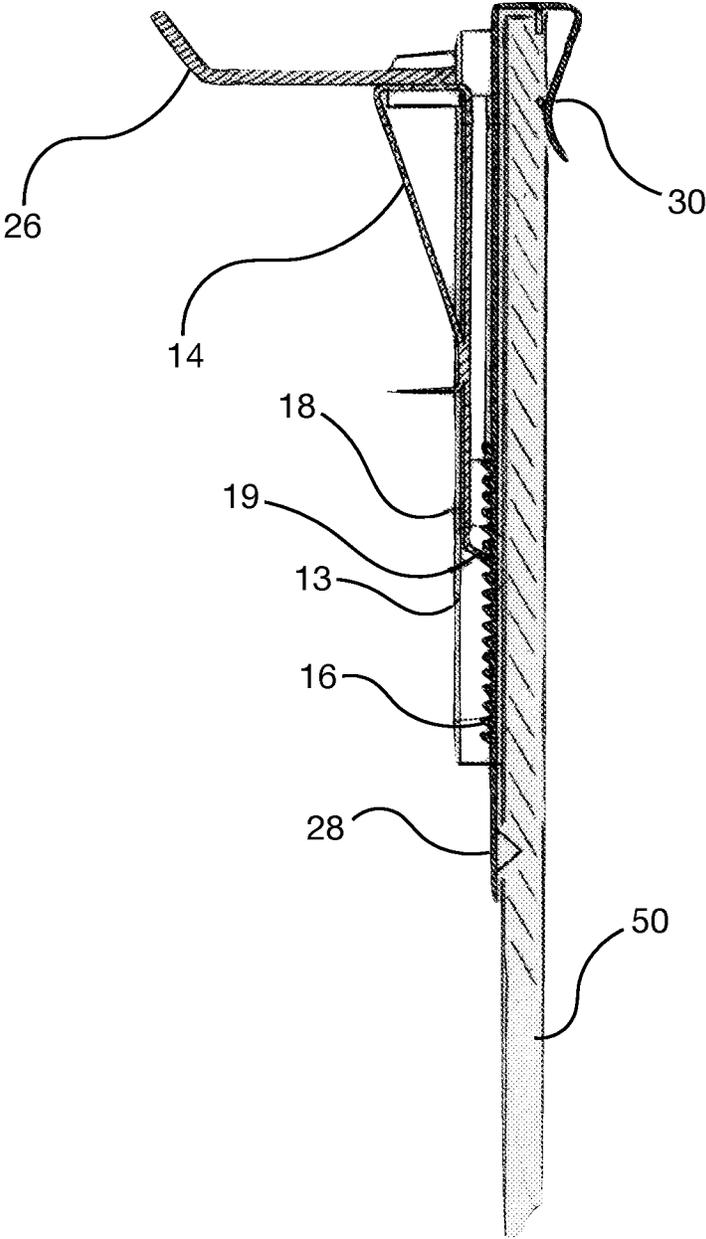


FIG. 4

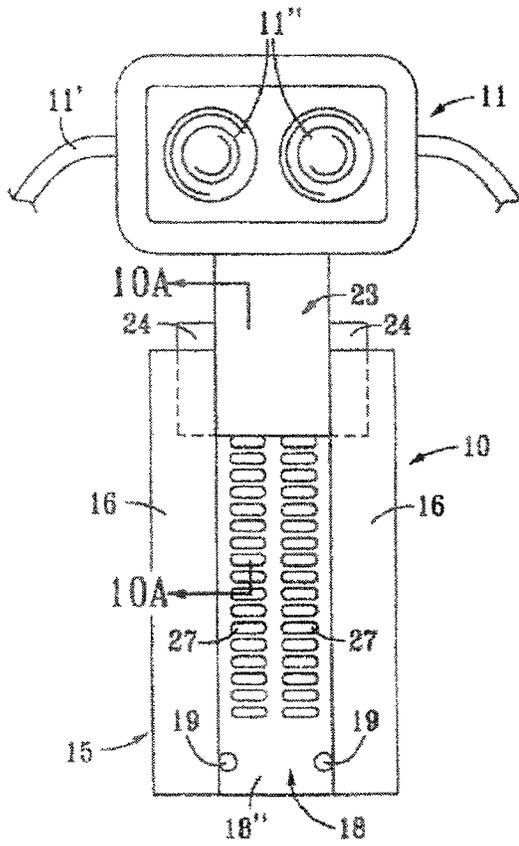


FIG. 5
(PRIOR ART)

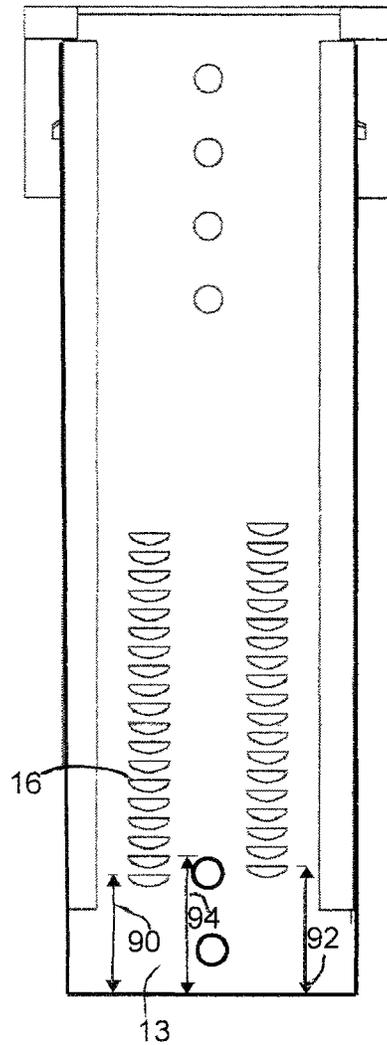


FIG. 6

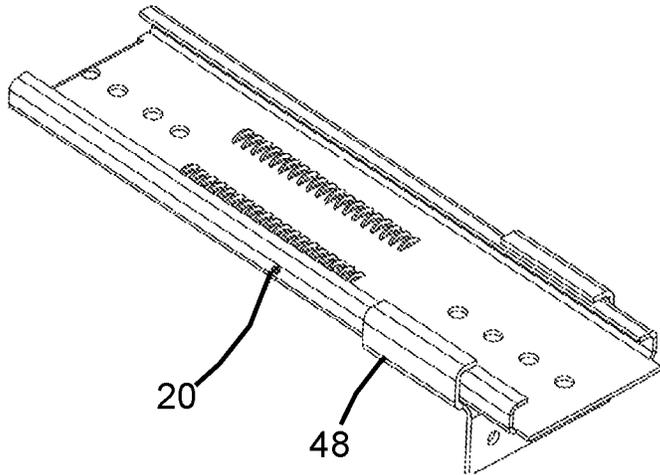


FIG. 7(c)

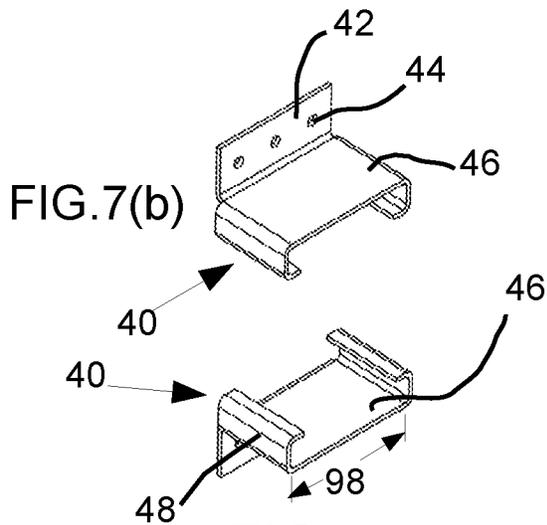


FIG. 7(b)

FIG. 7(a)

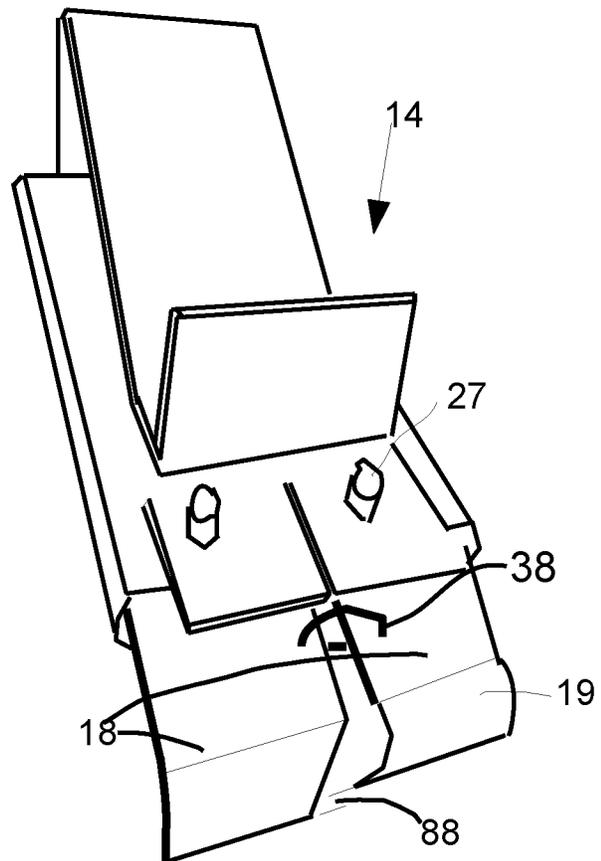


FIG. 8

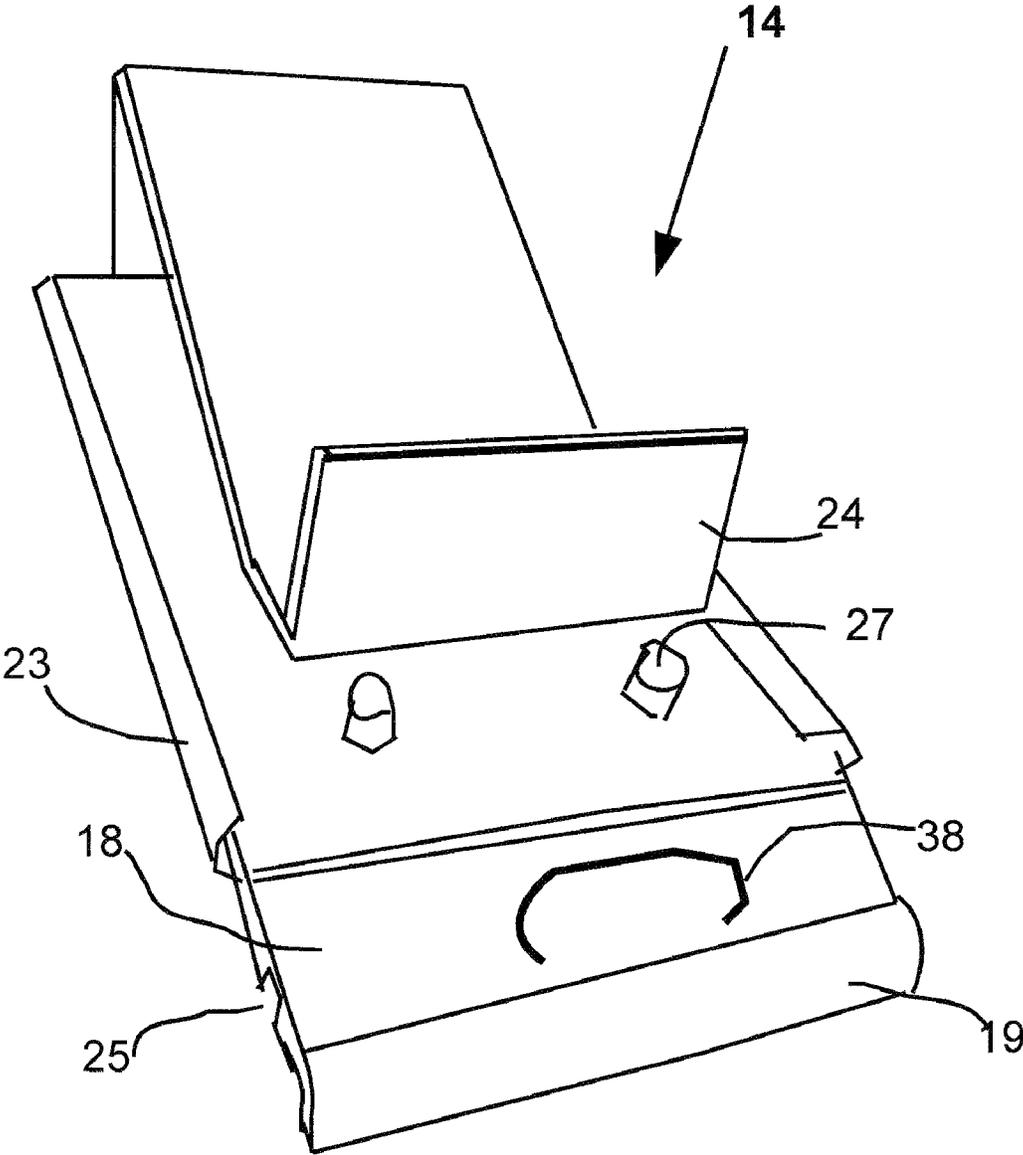


FIG. 9

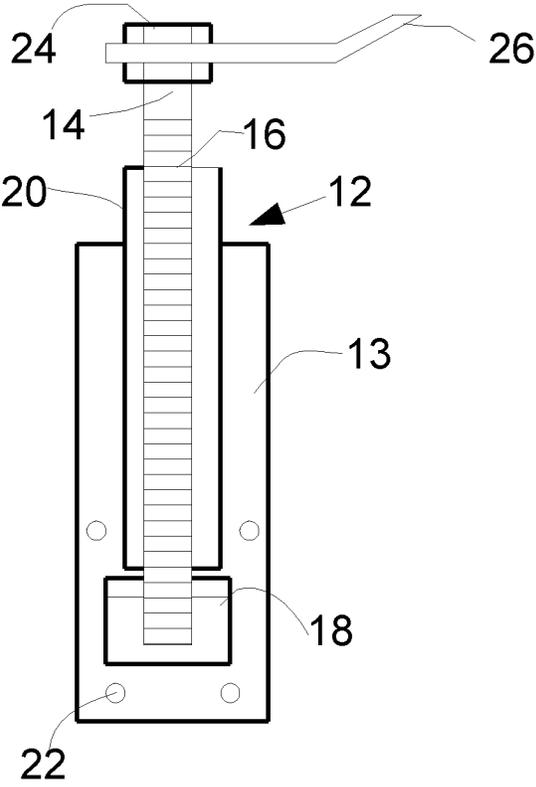


FIG. 10

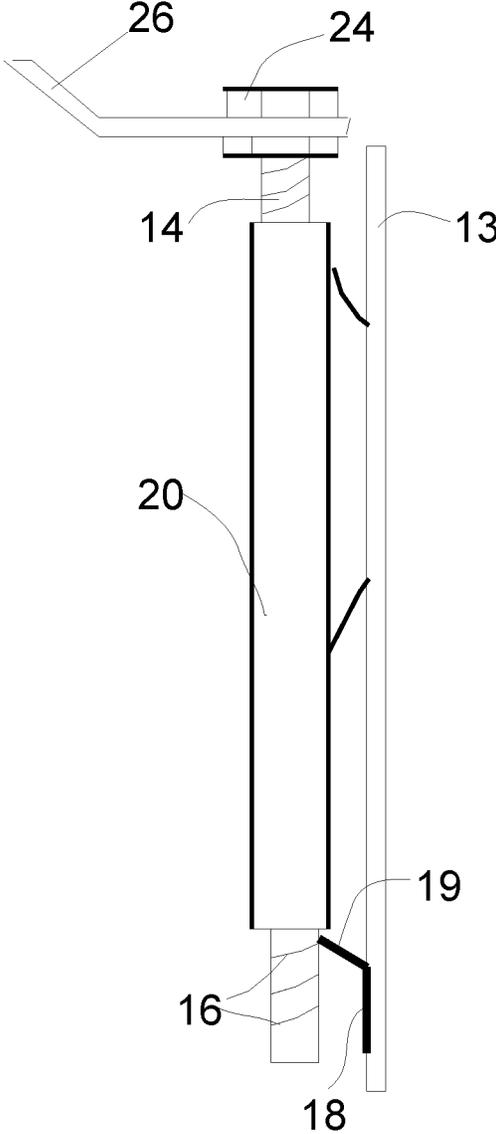


FIG. 11

1

**RAPID-INSTALL UNDERMOUNT SINK
BRACKET****CROSS REFERENCE TO RELATED
APPLICATION**

The present application is a continuation-in-part of and claims the benefit of pending non-provisional application Ser. No. 16/510,982 filed on Jul. 13, 2019, and incorporated herein.

FIELD OF THE INVENTION

The present invention relates, in general, to the attachment of under-mount sinks and more particularly, this invention relates to the rapid mounting and securing of under-mount sinks beneath counter tops.

BACKGROUND OF THE INVENTION

The attaching of under-mount sinks beneath counter tops has always been laborious and time consuming. There are many methods and a variety of installation techniques. The many models of sinks available in the market place pose different types of installation techniques. Information relevant to attempts to address this problem can be found in a few exemplary types of cross members. One suitable for the purpose of supporting sinks is described in U.S. Pat. No. 7,429,021. Another exemplary cross member suitable for use as a sink support is described in U.S. Pat. No. 5,538,206. But none of these examples of prior art have addressed the supporting of the front of a sink. Blaine in U.S. Pat. No. 9,290,919 discloses a fixed length support member that can be fastened at one end to a cabinet wall such as to hold up undermount sinks, but with no adjustment provisions once installed. In U.S. Pat. No. 6,105,182, Elnar teaches a ratchet bracket with two columns of teeth. Elnar discloses that the purpose of the two rows is to provide added durability and support strength by supporting the bottom edge of the sliding piece with two teeth simultaneously.

SUMMARY OF THE INVENTION

The present invention provides an apparatus and method of adjustably securing a sink to the bottom of a counter top and includes an elongated channel base member configured for attachment to a cabinet wall beneath a counter top, and at least one column of ratchet teeth in the middle section. A movable sled member slides within edge channels on the channel base member and includes a sink-contact arm at an upper end and at least one blade spring at a lower end, wherein the blade spring is configured to engage with the ratchet teeth such as to permit upward movement, but not in the down direction, unless the blade spring tip is temporarily pried free of the ratchet teeth.

OBJECTS OF THE INVENTION

It is, therefore, one of the primary objects of the present invention to provide a fast, easy, effective, efficient, simple and economical way of attaching and reliably securing an undermount sink to a countertop.

Another object of the present invention is to provide a self contained way of attaching a sink-support bracket requiring no external drilling, tapping, screwing, bolting, threading or adhesives while allowing the end user the option of securing the bracket by screws.

2

Still another object of the present invention is to provide 180° range of horizontal pivoting of the arm that will engage the sink flange to accommodate various size gaps between a cabinet wall and a sink flange.

5 An additional object of the present invention is to provide a faster action of adjustable vertical range of motion to engage the bracket with the sink flange by way of a sliding ratchet mechanism, and yet provide a release means if needed.

10 Still another object of the present invention is to provide enhanced variable height adjustment, which allows the sink to be cradled below the countertop. This allows an open window for the application of sink sealant. The sink is then raised to meet with the bottom of the countertop.

15 An additional object of the present invention is to provide a narrow-profile version of a bracket to support a sink where there is little clearance to work in the front region of the sink and side walls of the cabinetry.

Yet another objective is to include a design feature in a sliding ratchet assembly with finer adjustment of height than a typical ratchet device would offer.

20 In addition to the various objects and advantages of the present invention described with some degree of specificity above, it should be obvious that additional objects and advantages of the present invention will become more readily apparent to those persons who are skilled in the relevant art from the following more detailed descriptions of the invention, particularly, when such description is taken in conjunction with the attached drawing figures and with the appended claims.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. 1 illustrates a perspective side elevation view of a preferred embodiment of the present invention.

FIG. 2 provides a perspective view of an alternative embodiment of the present invention with a different method of wall attachment.

FIG. 3 provides a bottom end view of a key feature of the present invention.

FIG. 4 is a side sectional elevation view of the preferred embodiment.

FIG. 5 provides an elevation view of a prior art ratchet bracket.

FIG. 6 is an elevation view of a key element of the present invention.

FIGS. 7 (a), (b) and (c) provide perspective views of an optional adapter for the present invention.

FIG. 8 provides a perspective view of an alternative embodiment of the present invention.

FIG. 9 provides a perspective view of an alternative embodiment of the sled member of the present invention.

FIG. 10 is a front elevation view of an alternative embodiment of the present invention.

FIG. 11 presents a side elevation view of the alternative embodiment of FIG. 10.

**DETAILED DESCRIPTION OF A PRESENTLY
PREFERRED AND VARIOUS ALTERNATIVE
EMBODIMENTS OF THE INVENTION**

Prior to proceeding to the more detailed description of the present invention it should be noted that, for the sake of clarity and understanding, identical components which have identical functions have been identified with identical reference numerals throughout the several views illustrated in the figures. An exception is the prior art FIG. 5.

3

Referring initially to FIG. 1, this provides a perspective view of a preferred embodiment of the present sink support bracket invention in use generally shows as 10. An elongated channel base member 12 has at a top end an inward curving thin gauge metal clip 30 fixed to the top of the back plate 13 of the channel base member 12, configured to compresses inward against a side cabinet wall compressing the wood cabinet. Metal clip 30 is pretensioned and is adjustable to meet different cabinet wall thicknesses, and in this same area are two points of no return one way stab-locks 28. The top of the bracket has two stab locks 28 to engage the top of the cabinet wall, this is to prevent sag when there is a load on arm 26. There are also two hammer-in type stab locks 28, adjacent the bottom end of the base member 12, to prevent counter rotation when there is a load on the sink-contact arm 26 in the fully retracted position. This method of attachment requires no external fasteners. The installed bracket is held in place vertically by the weight of the countertop and the stab locks. The main body of the base member 12 also includes at least one column of vertically oriented ratchet teeth 16 having a plurality of teeth 16 through a pair of parallel outwardly facing spaced apart columns of peripheral louvers or protrusions 16. By ratchet teeth is meant they permit movement across them in one direction, but not the other unless special methods are utilized. The two columns preferably have the teeth staggered in horizontal misalignment for finer adjustment of height as explained further later. The sled member 14 adjusts vertically with at least one blade spring 18 at the bottom end, but preferably two, with curved tips that engage on the teeth 16 of the channel base member when sliding upward, but prevents downward movement. By blade spring is meant a strip of preselected semi-flexible material with a predetermined thickness and a free end that can be temporarily flexed from its resting position but then return when released to its original resting position. This contrasts with semi-flexible materials that when bent substantially remain essentially in the new position. Herein, the semi-flexible material can be either metal or plastic. Preferably, the preselected material is a high-carbon spring steel with a preselected thickness in the range of 0.3 to 0.7 mm. Any thinner than the low end of the range would probably make it too weak to support the load above, and above the top of the range it would be too resistant to manual pushing of the sled. Any use of power tools would tend to lift the counter top excessively. At the top end of the sled member 14 is a sink-contact arm 26, which preferably has an upward curving tip and an 180° adjustable horizontal range of pivot motion to engage the rim of the sink depending of the gap to the cabinet wall.

FIG. 2 provides a perspective profile view of an alternative embodiment of the present invention with a different method of wall attachment. The main body 12 shown without clip includes mounting apertures 22 in the planar back plate of the base member 13 that secures to a vertical surface by way of mounting screws (not shown) through the apertures 22. It is preferable but optional to have one or more adhesive pads (not shown) on the back side for ease of installation. This gives the end user the option to secure the device to a cabinet wall where the clip-on version shown in FIG. 1 cannot be used. This figure also shows the preferred curved longitudinal edges 34 the sled member 14 configured for sliding engagement with the edge channels 20 of the channel base member 13.

FIG. 3 provides a bottom end view of a key feature for both embodiments of the present invention. The importance of this would not be obvious until one attempts to lower the sled member for height adjustment or removal of the sink

4

because the ratchet teeth 16 inhibit downward movement, just upward. To release the blade springs 18 of the sled member 14, a screwdriver or other tool is inserted in the notch opening 37 between the two curved tips and pried outward to temporarily release the curved ends of the blade springs 18 from the teeth 16. With just blade spring, the notch 37 is cut into the curved bottom of the blade spring 18. Pulling down the lower flange 24 on the sled member 14 enables lowering the sled member while the foot tabs are still pried up. Removing the tool allows the foot tabs to re-engage with the ratchet teeth, or the sled member to be completely separated from the ratchet channel bracket.

FIG. 4 is a side sectional elevation view of the preferred embodiment including the top clip 30. This view also shows the curved tip 19 of the blade spring 18 which is the lower part of the sled member 14 in other figures. It also shows how the clip 30 engages the top of the cabinet wall 50, and the stab-locks 28 are forced into the wall.

FIG. 5 provides an elevation view of a prior art ratchet bracket. Elnar in the previously-referenced patent teaches using two rows of ratchet teeth (indentations) for "greater reliability and durability" (col. 4, line 34). The bottom edge of the slider portion 24 shows that the top edge of the teeth 27 in each row are in lateral alignment. This arrangement allows for two points of support contact to provide more reliable load support. However, the next level of support must be one full increment of tooth height, which by the nature of ratchet teeth must be a certain finite increment. Sometimes, one level may not provide tight-enough support, but the next level may be too far up.

FIG. 6 is an elevation view of a key element of the present invention: the bracket plate 13 with two columns of ratchet teeth 16. In contrast with Elnar, the teeth in one column herewith are purposely in staggered misalignment horizontally with the opposing tooth in the other column. It can be further explained by noting that the height of the top edge of the first tooth from the bottom on the right is at a height 92 intermediate between the heights of the the bottom two on the left, 90 and 94. This is a significant feature because it provides finer adjustment of height as the sliding member is pushed upward. The teeth must have a finite height to function, and that sets a certain minimum increment in height as the sliding member is pushed up and one blade springs engages a ratchet tooth on one side and subsequently the other blade spring engages with a tooth on the opposite column on ratchet. However, with the second column of teeth offering a shorter increment relative to the first column, the next increment of supported height is about half as much. The device of Elnar cannot provide this, and in fact teaches away from it by emphasizing greater support strength.

FIGS. 7(a), 7 (b) and 7 (c) provide perspective views of an optional adapter 40 for the present invention. The width 98 of channel 46 is such that it engages operably over the edge rails 20 of the channel base member. There is a flange portion 42 at a right angle to the channel 46 and with 2 or more apertures in the flange portion 42. The use of this optional adapter become advantageous when helping to secure an undermount sink that is already installed, but now loosened from the underside of the counter top. Due to the narrow clearance between the sink and the inside front of the cabinet, it helps very much to first install the adapter plate 40 via the flange portion 42. The adapter plate 40 is attached to the underside of the cabinet in the front with the flange portioned screwed onto the top wooden rim. The channels 20 of the base member slide into the channels 46 of the

5

installed adapter plate **40** as shown in FIG. 7(c) and assists in holding it there until the lower screws are put into the cabinet front wall.

FIG. **8** provides a perspective view of an alternative embodiment of the sled portion **14** of the present invention. The blade springs **18** in this variation are non-integral and made of a semi-bendable leaf spring sort of a preselected material, typically high-carbon steel. This is so that they will slide more readily over the teeth as the sled **14** is pushed up into place. They are held in place with fasteners **27** such as rivets or bolts. In case the sled needs to be lowered, it can be released temporarily from the teeth with a prying means that can be operably engaged with a screwdriver. The means may be a ring or hoop **38**, or a notch **37** as shown in FIG. **3**. In addition, an alternative means of enabling finer tuning of the height is for one curved tip of one foot tab **18** to be marginally longer by a predetermined gap **88**. The gap **88** is about half of the spacing between top edges of the teeth. If **88** was equal to the gap between teeth, there would be no finer adjustment.

FIG. **9** provides a perspective view of an alternative embodiment of the sled member **14** of the present invention. In this variation, the blade spring **18** is a single unit with a single tip portion **19**. The blade spring **18** can be integral with the rest of the sled member **14** or attached with fasteners **27**. The prying means to release the curved **19** from the ratchet teeth (not shown) is a ring **38** under which a screwdriver can fit and be used to lift the blade spring **18** away from the ratchet teeth. An optional feature is a reduced thickness portion **25** that is configured to reduce the force needed to bend the tips and thus reduce the upward force necessary.

FIG. **10** is a front elevation view of an alternative embodiment of the present invention. An elongated channel member **12** includes a channel with curved edges, **20**, fixed to a mounting base plate **13**. A sliding member **14** has a multitude of teeth **16**. A sink support arm with a curved tip **26** is pivotably connected to the top end of the sliding member **14**. At least two apertures in the mounting plate **13** allow for secure mounting to a cabinet wall with screws, nails or bolts. The teeth **16** on the sliding member **14**, in this example a rod, can slide over the curved tip **19** as it is pushed upward over blade spring **18** on the back plate **13**, but both are configured to not allow movement of the sliding member **14** downward.

FIG. **11** presents a side elevation view of the alternative embodiment of FIG. **10**. The spring blade **18** fixed to the back plate **13** has a curved or bent portion **19** to allow engagement with the teeth **16** on the sliding member **14**, which in the example shown is a threaded rod. Preferably, the distal end of the bend portion **19** is generally tapered like a knife edge for better engagement with threads. The combination of teeth **16** and spring blade **18** are configured to permit unidirectional movement by manual force. The curved lateral edges **20** of the channel member **12** restrict movement of the sliding member **14** other than for free movement upward. While not the preferred mode, the interior of the channel **20** may also be threaded such that the threaded rod **14** can be screwed up or down. The curved-tip arm **26** is free to pivot at the top rivet or bolt **24** such that the underside rim of a sink being supported can be engaged at various distances from a cabinet wall.

What is claimed is:

1. An adjustable support apparatus for under-mount sinks comprising:

- a) an elongated channel base member configured for attachment to a cabinet wall wherein the channel base member includes channels on longitudinal sides of the

6

channel base member, a planar back plate, and one of apertures and stab-locks in the planar back plate;

- b) a sliding member configured to movably engage within the channels of the channel base member, wherein said sliding member has an arm adjacent a top end;
- c) at least one column of ratchet teeth on said planar back plate;
- d) at least one blade spring with a curved tip adjacent a free end of the blade spring, wherein said blade spring is fixed at an end opposite the curved tip to said sliding member; and
- e) a prying means proximal said curved tip configured for temporarily disengaging said curved tip free of said column of ratchet teeth.

2. The adjustable support apparatus of claim **1**, wherein said planar back plate further includes a top end clip.

3. The adjustable support apparatus of claim **1**, wherein said sliding member is a sled unit which further includes curved lateral edges configured for sliding with said channels on said channel base member.

4. An adjustable support apparatus for under-mount sinks comprising:

an elongated channel base member configured for attachment to a cabinet wall wherein the channel base member includes channels on longitudinal sides of the channel base member, a planar back plate with two columns of ratchet teeth, and one of apertures and stab-locks in the planar back plate, wherein said two columns of ratchet teeth are two spaced apart columns of at least 5 ratchet teeth each in staggered horizontal misalignment and configured for height adjustment in increments intermediate to that of horizontal alignment, said ratchet teeth configured for prevention of downward movement of an attached sled member; and

wherein the sled member is configured to movably engage within said channels of said channel base member, wherein said sled member has an arm adjacent a top end and at least one blade spring with curved tip adjacent a lower end, and wherein said blade spring of said sled member includes a means for prying proximal said curved tip wherein said means for prying is configured for temporarily lifting said curved tip free of said columns of ratchet teeth.

5. The adjustable support apparatus of claim **4**, wherein said at least one blade spring with curved tip includes two parallel blade springs with curved tips at a free end of the blade springs.

6. The adjustable support apparatus of claim **4**, wherein said arm of said sled member has an upwardly curved distal end and a pivoting means.

7. The adjustable support apparatus of claim **4**, wherein said channel base member further includes a flanged adapter plate configured to slidingly engage with the channels on the longitudinal sides of said channel base member such as to facilitate installation of said channel base member adjacent a top edge of a cabinet front.

8. The adjustable support apparatus of claim **5**, wherein said two blade springs are non-integral and of a preselected material and predetermined thickness with the curved tips at the free end of said blade springs.

9. The adjustable support apparatus of claim **8**, wherein said curved tips of said blade springs of said sled member are of unequal length with a predetermined gap configured for finer height adjustment than with equal length.

10. The adjustable support apparatus of claim 8, wherein said curved tips of said blade springs of said sled member are made of a high-carbon steel with a thickness between 0.3 and 0.7 millimeters.

11. The adjustable support apparatus of claim 8, wherein 5
said two blade springs are configured with one of a ring or notch operably engaged with said blade spring for temporarily disengaging said sled member from said ratchet teeth.

12. The adjustable support apparatus of claim 4, wherein said at least one blade spring includes a reduced-thickness 10
portion configured to reduce bending force without substantially reducing support strength.

* * * * *